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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,394	07/11/2003	Robert Bening	W-0006	5601

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EXAMINER

ASINOVSKY, OLGA

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,394

Applicant(s)

BENING ET AL.

Examiner

Olga Asinovsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/11/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dillman et al U.S. Patent 5,420,203.

Dillman discloses radial block copolymer having (A-B)_n-X configuration, wherein A-block is polystyrene block, and B-block is polybutadiene or polyisoprene. The block copolymer is produced by using an anionic polymerization initiator such as organolithium compound, column 2, lines 45-47, column 3, lines 1-10, and coupling agents such as a diester coupling agent, column 3, line 58. Coupling agent, which is a dimethyl adipate, is readable in applicants' claims 1 and 10. The "n" number in the formula would be readable in the present claim 1 for the (iv) definition, because the coupling agent is the same as in the present claims, and this coupling agent works for producing a diblock, triblock and multiblock copolymer, column 3, lines 62-64. Dillman discloses a living polymerization process by contacting styrene and butadiene monomers with an alkali metal compound=organolithium compound in a suitable solvent, column 2, line 67-68 and column 3, lines 1-39. The copolymer can be hydrogenated, column 6, line 5, for the present claim 20. The coupled block copolymer

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can be used for making a bituminous composition, column 6, lines 49-51, for the present claim 19.

Dillman does not disclose the molecular weight of the styrene-butadiene block copolymer (AB) having about 2000 daltons to about 300,000 daltons as requiring in (v) definition in the present claim 1. It would have been obvious to one of ordinary skill in the art to consider that the specified range of a molecular weight of the block copolymer can be obtained in Dillman's invention because reference discloses the block copolymer having the same structure as $(A-B)_n-X$ and the same ingredients as in the present claim 1 and a said block copolymer in Dillman's invention is produced under living polymerization process conditions such that the desired molecular weight is controlled by the process conditions for a particular intended use of said block copolymer.

3. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schade et al U.S. Patent 6,506,846.

The independent present claim 11 discloses a process for producing a radial styrenic block copolymer comprising (a) polymerizing a monomer mixture with an anionic polymerization initiator which is an organo-substituted alkali metal compound in a suitable solvent and (b) adding a metal alkyl compound having aluminum or zinc or magnesium metal, and (c) adding a diester coupling agent to the cement under reaction conditions sufficient to couple the living polymer.

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Schade discloses a method for making a molding composition comprising polymerizing a styrene-butadiene block copolymer that can have a star shape using a polyfunctional coupling agent such as diethyl adipate, column 3, lines 63-64 and column 5, line 66. In a first step a diene rubber is polymerized in the presence of sec-butyllithium in cyclohexane, than styrene monomer is added to the rubber solution in the presence of butyl magnesium. The resulted polymer is an impact-modified thermoplastic molding material.

The difference between the present claim 11 and Schade is the requirement in the present claim that a mixture of styrene and diene monomers is polymerizing in a first step. However, it would have been obvious to one of ordinary skill in the art to consider that a mixture of styrene and butadiene monomers can be polymerized in the first step in Schade's invention because a living polybutadiene block is polymerizing first in a living polymerization process, than a styrene block is polymerizing, and a metal organyl compound is a compound to control the anionic polymerization process such as a retarder, column 2, lines 8 and 17-23. The prima facie case of obviousness is that a process for producing a block copolymer in Schade's invention can be modified by adding both monomers in the first step of anionic polymerization process, and thereby obtain the same result of producing a block copolymer.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art is relevant to show the state of the art knowledge.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

O.A.

O.A.

September 15, 2004

Olga Asinovsky
Examiner
Art Unit 1711



James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700